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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,010	03/22/2001	Dean R.E. Long	SUN1P279/P4888	5180
22434	7590	06/15/2004	EXAMINER	
BEYER WEAVER & THOMAS LLP			RIMELL, SAMUEL G	
P.O. BOX 778			ART UNIT	
BERKELEY, CA 94704-0778			PAPER NUMBER	
			2175	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/816,010

Applicant(s)

LONG, DEAN R.E.

Examiner

Sam Rimell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
**SAM RIMELL**  
**PRIMARY EXAMINER**

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Klots et al. (U.S. Patent 6,144,983).

Claim 1: Reference is made to FIG. 3 and col. 11, line 63 through col. 12, line 6. The “threads” are the processes referred to as “first process”, “second process”, “third process” and “fourth process”. Klots et al. discloses the steps of identifying a memory address value associated with an object (identifying a row) and identifying a first synchronization construct (receiving a lock request for that particular row). A determination is made as to whether a first synchronization construct (a lock) is available by performing a test to determine whether a lock has been applied to a row, in which case no synchronization construct would be available to apply to that row. When the row is not locked, the synchronization construct (the lock) is available for application to the hash bucket associated with that row. The synchronization construct (the lock) would then be associated with that object by locking the hash bucket containing the object.

The method steps recited in lines 9-11 are optionally recited by the usage of an “if” clause and thus are accorded no patentable weight.

Claim 2: FIG. 3 illustrates the indexing into a data structure. The data structure is FIG. 3 and takes the form of an index because it associates database rows with specific hash buckets. In the method of Klots et al., a hash function is performed on the requested memory address (requested row in FIG. 3). The resulting hash value is then indexed into the data structure of FIG.

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3 to determine which hash bucket is associated with the hash value. A lock (synchronization construct) is then associated with the hash bucket containing the initially requested address value (row). Since a lock will lock up all of the rows in the bucket, it can be stated that one single lock is associated with a plurality of memory addresses (rows). Also see col. 12, lines 1-3, which illustrates all of the rows associated with a bucket being locked.

Claim 3: The memory address (row) which is initially requested is run through a hash function. The hash value resulting from the hash function is then indexed into the data table of FIG. 3 to determine which hash bucket is to be locked.

Claim 4: The data structure is the structure shown in FIG. 3. This structure is also readable as a hash table since it relates hashed values of memory addresses (rows) to hash buckets. Also see col. 11, lines 66-67.

Claim 5-6: The synchronization constructs are the locks described in Klots et al. The system of Kots et al. can include a plurality of locks, since each hash bucket can be individually locked.

Claim 7: Each lock is considered as “non-nestable” by reason that the disclosure of Klots et al. does not state that the locks are nestable. The locks are “global” by reason that a lock on hash bucket will lock a plurality of rows. In other words, the objects in the rows of FIG. 3 share a lock on the hash bucket containing those rows.

Claim 8: FIG. 3 illustrates a plurality of data rows, which are a plurality address locations in a memory. A thread is the process performed on those rows (col. 11, line 63) that leads to a request for a lock. The objects are whatever data is contained in the rows. The locks are accessible to the objects by reason that the locks are applied to hash buckets associated with

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the objects. The data structure is the structure of FIG. 3 associates locked (or unlocked) hash buckets with rows. The thread described at col. 11, line 63 is the same thread (first process) identified by the lock manager at col. 12, lines 46-54 as holding a conflicting lock. As a result of the determination that this same thread holds the conflicting lock, the lock is released by the lock manager (col. 12, line 51).

Claim 9: The hashing mechanism is the hash function that creates hash values (col. 11, lines 64-67).

Claim 10: The resulting hash values that derive from the hash function are address locations.

Claim 11: See remarks for claim 1. In addition, col. 12, lines 26-53 describe determination steps in which a determination is made as to whether another thread attempting to acquire access (the fourth process is another such thread) has already acquired access to the hash bucket (310) containing the objects (data). In this particular example, the other thread (fourth process) has not acquired access to objects in the hash bucket. In this case, the thread which has acquired access (the first process) by holding a lock on the hash bucket releases its association by releasing a coarse grain lock on the hash bucket (310).

Claim 12: See remarks for claim 2.

Claim 13: See remarks for claim 3.

Claim 14: See remarks for claim 4.

Claim 15: See remarks for claim 5.

Claim 16: The computer readable medium may be a hard drive (206, 208, 210 in FIG. 2).

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Claim 17: FIG. 3 illustrates a plurality of index values (rows) and a plurality of lock identifiers (buckets 310, 320, 330). The lock identifiers (buckets) are associated with the index values (rows) in FIG. 3. The locks are held by threads, which are the “process one”, “process two”, “process three” and “process four”. The thread described at col. 11, line 63 is the same thread (first process) identified by the lock manager as holding a conflicting lock. As a result of the determination that this same thread holds a conflicting lock, the lock is released (col. 12, line 51).

Claim 18: FIG. 3 illustrates a plurality of lock identifiers (buckets). At least one lock identifier is associated with a plurality of rows (each bucket is associated with plural rows in FIG. 3).

Claim 19: The data structure is accessed by a thread (a process) using a hash value resulting from a hash function.

Claim 20: The index values (rows) are also the resulting hash values from the hash function. In other words, operating the hash function produces a hash value that corresponds to one of the rows.

#### Remarks

Applicant's arguments have been considered.

Applicant argues that the cited portions of Klots et al. do not describe a need for preventing nested locks and that Klots et al. does not describe non-nestable threads. In reviewing the claims, examiner finds no specific requirements calling for the prevention of nested locks nor a specific requirement calling for non-nestable threads. Accordingly, applicant's arguments to these points are moot.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Sam Rimell at telephone number (703) 306-5626.



Sam Rimell  
Primary Examiner  
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